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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,236

12/24/2008

Vincent Le Nir

F40.12-0041

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EXAMINER

LE, THANH C

ART UNIT

PAPER NUMBER

2618

MAIL DATE

DELIVERY MODE

09/01/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,236	Applicant(s) LE NIR ET AL.	
	Examiner THANH C. LE	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/30/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Reduced complexity space time block coding and decoding schemes with block linear precoding." by V. Le Nir et al in view of Ketchum (US 2003/0185310).

With respect to claims 1 and 11-12, the article teach multi antenna system method for the sending of a signal formed by vectors, each vector comprising N source symbols to be sent, and implementing M transmit antennas where M is greater than or equal to 2. The signal, implementing a matrix product of a source matrix, formed by said vectors organized in successive rows, by a linear precoding matrix, delivering a precoded matrix (abstract and 2nd column of the article). The article antenna system fails to show the precoded vectors corresponding to columns of said precoded matrix are transmitted and distributed successively over the antennas of the transmitting system. Ketchum teaches a precoding method for a multipath channel in a MIMO system comprising a TX MIMO processor (figures 3-4) for formulating precoded vectors (paragraph [0052]) and transmitting precoded symbols over antennas (Paragraphs [0058] and [0067]). Therefore, it would have been obvious to one skill in the art to

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modify the article antenna system by providing the Ketchum mutipath antenna system thereto in order to enhance reliability for the transmission system.

With respect to claims 5 and 13, claims 5 and 13 teach the reception side of the precoded symbols and Ketchum also teaches the process of detecting symbol data (figures 3-4); therefore, the process of detecting data from the transmitted precoded symbols would have been considered obvious to one skill in the art.

With respect to claims 2-4 and 6-10, the article system also teaches the formula of the precoding matrix; however, the article system fails to show the block matrix, unitary matrix and various algorithms. One skill in the art would have recognized that the differences are purely dependent the particular system requirement s and they would not alter the main concepts of the invention which is a matrix product for sending precoded symbols over antennas. Therefore, the matrix products and algorithms would have been considered obvious to one skill in the art.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

the claimed invention is directed to non-statutory subject matter.

Claim 11 is rejected under 35 USC 101 because claim 11 recites “a signal comprising” which does not provide any data structure. In addition, The phrase “signal” does not provide any concrete and tangible results; therefore, claim 11 is rejected under 35 USC 101 as directed to non-statutory subject matter.

It is suggested that the signal claimed should be stored or contained in the apparatus form such a device, a transmitter or a receiver.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sandhu, Mujtaba and Cho teach a distribution and transmission system utilizing precoded symbols.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH C. LE whose telephone number is (571)272-5027. The examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TCL
8/29/10

/Thanh C Le/
Primary Examiner, Art Unit 2618